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112055-0073U
17732-67070.00

REMARKS

The Examiner finally rejected the claim under 35 U.S.C. 103(a) as unpatentable over U.S. Pat. no. 6,448,815 to Talbot et al. (Talbot) in view of Mitsuo (JP 07-307661). This response is being filed directly after the Examiner and the below signed attorney spoke regarding this application and the Talbot patent.

The present amendment adds to the independent claim 1 the following limitation, (and the independent claim 10 has a comparable limitation):

with the transfer logic in one logic state,...

wherein the difference current, between the unequal logic signal currents, flows back to the means for selectively driving,

No new matter is introduced, see page 6, lines 4-6. The present invention drives unequal currents into the two lines of a transmission line at the same time during one logic state. The difference current is returned to the current sources along a conductor that is not one of the transmission line conductors. The phrase "with the transfer logic in one logic state" is used to make the point that the different currents are being driven at the same time.

A fundamental point in the present claims (and in the original claims) is that in one logic state unequal currents are driven the two conductors of a transmission line simultaneously. In such a case there MUST be a return path for the difference between these unequal currents. In original FIG. 4A the path is shown as the shields and the dif-

ference current Is. The present amendment now directly claims this return current flowing back to the driving means.

The Examiner on page 2, paragraph 2 that Talbot has "means for selectively driving unequal current through the first and second carrying conductors... " The Examiner then states the "..(differential current signals O and O/ are having unequal magnitudes at any particular instant in time...)..."

O and O/ in Talbot are called a complementary differential output signal (note O-O/ are use in the singular) to be transferred across the transmission line. See col. 4, lines 32 et seq. Line 35 continues "Control over the voltage level of the output signal O, O' is..." O and O/ constitute a single differential voltage signal (that is the difference between the magnitudes of O and O').

The Examiner and Talbot use the term "complementary' during the discussion. Respectfully Talbot in column 4, lines 26-34 illustrates what "complementary" means. In particular, Talbot reads, "...four n-channel transistors 30A, 30B, 30C, 30D which are driven by complementary data bits D, D'. The bridge circuit 28 receives the complementary data bits from the driving circuit, and in turn provides a complementary differential output signal O, O' to be transferred across the transmission line 22 to the receiver 26." It is clear, and I hope the Examiner agrees, that to describe D and D' as complementary means that when, for example, D is high D' is low, and when D' is high D is low. D and D' are the complementary high and low signals of the same logic signal.

Talbot in the above reference is using "complementary" in the normal Boolean sense. That is when one Boolean operation forms a result, the negation of that result by

another Boolean operation is referred to as a 'complementary" operation. So D and D' and O and O' are illustrate complementary Boolean terms. In Talbot this just means that O and O'(to use the Examiner's terms) are logic inverses of each other, and differential operation refers to the magnitude of the difference between the two. But, neither is directly material to the present invention as claimed where, in one logic state there are different magnitudes of currents flowing in the two conductors of a transmission line that require a return path to the driving sources. The independent claims now more clearly include such a limitation.

In more detail, As evident from Talbots FIG. 1 the switches allow the voltage signal across the transmission line to be reversed so that R2 to Vs is applied to line 32A and then later to 32B. And, R1 to ground is applied in a complementary way to 32B and then to 32A. But, Talbot always teaches (and Kirchhoff requires) that the current into 32A equals the current returned from 32B, else there would be another return path shown for the difference current to return to the sources. This is directly in contrast to the return path shown, claimed and discussed in the present invention.

The present invention relies on driving different current levels through the two conductors of a transmission line. The difference current exists persists as long as the signal is being sent. Kirchhoff's law requires the currents into any node in a circuit to add to zero – there is no time restraint. So currents in a complete circuit all occur at the same time. Since there can be no net current into any node, it follows that any current supplied from a terminal of a current source is returned to that terminal through the source. So the current emanating from a source terminal is returning via the return termi-

nal at the same time. Following this logic, in the present invention, if two different currents magnitudes are driven into the two conductors of a transmission line the difference between these currents must be returned to the source. In the present invention this is illustrated by using a shield as the return path, and if the unequal currents persist the difference via the shield persists. Note, this is simply not the traditional way signals are fed into transmission lines.

Talbot never shows a return path and Talbot never discusses unequal currents. The Examiner simply states the "current signals" O and O/ have unequal magnitudes. But, Talbot does not discuss unequal currents much less indicate any way a difference current, if it occurred, could be returned. In Talbot the reversal of logic states will simply reverse the polarities of the signals O and O/.

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Respectfully submitted,

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